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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,738	05/29/2001	Pieter Hendrik Albert Venemans	01100/LH	5982

1933 7590 07/15/2004

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EXAMINER

GEREZGIHER, YEMANE M

ART UNIT PAPER NUMBER

2144

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/806,738

Applicant(s)

VENEMANS, PIETER HENDRIK
ALBERT

Examiner

Yemane M Gerezgiher

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

YMG

DETAILED ACTION

1. This application has been examined. Claim 1 is pending.

Allowable Subject Matter

2. The following is a statement of reasons for the indication of allowable subject matter:

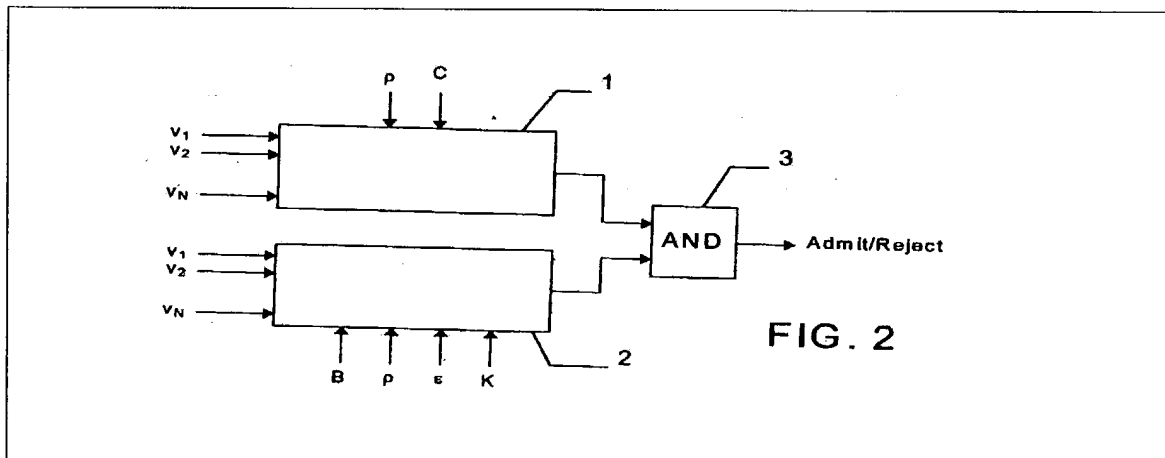
The closest prior art to the claimed invention is issued to Saranka, Sari (US 6314085 B1) hereinafter referred to as Saranka. Saranka disclosed a method/system for CAC (Connection Admission Control) device to an ATM switch. Saranka disclosed a connection admission control where the CAC function using parameters including PCR (Peak Cell Rate), SCR (Sustainable Cell Rate), BT (Burst Tolerance) and desired probability of cell lose (P_{Loss}). Saranka taught receiving a connection request, upon receiving the connection request computing the parameters (PCR, SCR, BT and P_{Loss}) and reading effective capacity (EC) from a table corresponding to the computed values and adding the effective capacity to effective capacities of connections in use and comparing the total capacity against a link capacity. Saranka further disclosed admitting/accepting a connection request only if the total capacity was less than the link capacity. (See ABSTRACT, Figure 4, Column 4, Line 48 through Column 5, Line 32 and Column 7, Line 65 through Column 8, Line 40).

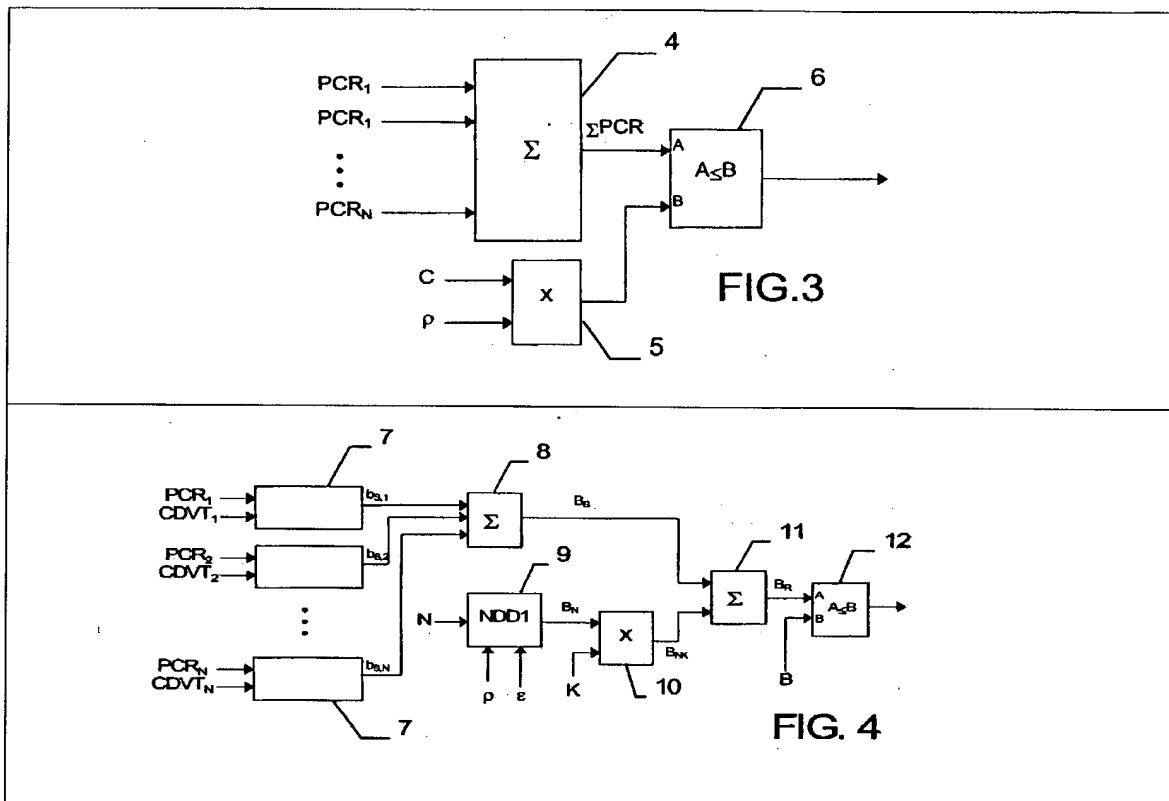
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However, None of the prior art of record taken singularly or in combination taught or suggested a CAC device comprising to sub-devices (See Figure 2) each generating a positive or negative result and granting/admitting a connection request to the ATM switch only when both sub-devices issue a positive signal, the first sub-device device comprising two arithmetic units and a second sub-device comprising multiple arithmetic units each calculating and comparing specific values of the parameters related in determining admittance of a connection request to the ATM switch where the first device comprising two arithmetic units, arithmetic units one calculating sum of the nominal traffic parameters Peak Cell Rate (ΣPCR) of each ATM connections and second arithmetic unit comparing the computed sum (ΣPCR) with a value $\rho \times C$, where C is a capacity at an output port and ρ is a constant ($0 < \rho < 1$) corresponding to a desired maximum load (See Figure 3) a second sub-device comprising multiple arithmetic units (arithmetic units 3-7) and a comparison device (reference # 12 in Figure 4), where the third arithmetic unit (reference # 7 in Figure 4) calculates "a buffer capacity $b_{s,i}$, the value of $b_{s,i}$ being equal to zero if the product of the nominal Peak Cell Rate (PCR_i) and Cell Delay Variation Tolerance ($CDVT_i$) of the related connection is less than or equal to a constant K , and the value of $b_{s,i}$ being equal to said product minus the value of K if the product is greater than K ", a forth arithmetic unit (reference # 8 in Figure 4) computing the sum of the calculated values $b_{s,i}$ for all ATM connections at a related output port, a fifth arithmetic unit (reference # 9 in Figure 4) calculating a buffer capacity B_N , "such that upon multiplexing of N independent, identical and ideal ($CDVT = 0$) traffic streams, using a single buffer with a buffer capacity of B_N , and assuming a

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maximum link load having a value of ρ , the average probability of cell loss as a result of buffer overflow will not exceed a given value of ϵ ," a sixth arithmetic unit (reference # 10 in Figure 4) which calculates a product (B_{NK}) of the value of B_N and the constant value K ; a seventh arithmetic unit (reference # 11 in Figure 4) which determines the sum (B_R) of the calculated values for B_S and B_{NK} ; and a comparison device (reference # 12 in Figure 4) which compares the calculated sum B_R with the given capacity B of the output buffer, a positive admission signal being emitted if the value of B_R is less than or equal to B , and a negative admission signal being emitted if the value of B_R is greater than B . The claimed invention is supported by the specification of the application (See Figures 2-4 below and Page 6, Line17 through Page 9, Line17).





Claim Objections

3. Claim 1 is objected to because of the following minor informalities:

The inventive entity recites the following:

- "... the total..." (Claim 1, Claim Line 10). There is insufficient antecedent basis. No "total..." has been previously defined in the claim.
- "...the sum..." (Claim 1, Claim Line 19). No "sum..." has been previously defined in the claim.
- "...at the related output port..." (Claim 1, Claim Line 22). No "related..." has been previously defined in the claim.

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- "...the newly requested..." (Claim 1, Claim Line 22). No "newly requested..." has been previously defined in the claim.
- "said first..." (Claim 1, Claim Line 18). There is insufficient antecedent basis. No "first sub-device" has been previously defined in the claim.
- "... the nominal traffic..." (Claim 1, Claim Line 20). There is insufficient antecedent basis. No "nominal traffic..." has been previously defined in the claim.
- "... the sub-device..." (claim 1, Claim Line 27). It is unclear whether the sub-device is the first or the second device.
- "and said second sub-device ..." (Claim 1, Claim Line 29). There is insufficient antecedent basis. No "" has been previously defined in the claim.
- "... the constant K..." (Claim 1, Claim Line 3). There is insufficient antecedent basis. No "constant K" has been previously defined in the claim.
- "the given value of ϵ " (Claim 1, Claim Line 16). There is insufficient antecedent basis. No "given value..." has been previously defined in the claim.
- "... which calculates the product ..." (Claim 1, Claim Line 17-18). There is insufficient antecedent basis. No "product" has been previously defined in the claim.

Appropriate correction is required.

Accordingly, in order to place it in immediate condition for allowance, the Examiner recommends amendment to the claim as follows:

1. A device for Connection Admission Control for an ATM switch, intended for admitting to the switch a requested ATM connection of the DBR type, such that the "Quality of

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service" of all ATM connections of the DBR type in said switch continues to satisfy certain conditions, in which a single buffer with capacity B is available for the composite traffic stream of DBR connections an output port with capacity while as a boundary condition it holds that ~~the~~ total average load of the output port does not amount to more than $\rho \times C$, where ρ is a constant with a value between 0 and 1, **characterized in that** the device comprises two sub-devices which each emit a positive or negative admission signal, admission to the switch only being granted to the new ATM connection if both sub-devices issue a positive admission signal,

said a first sub-device (1) COMPRISING:

- a first arithmetic unit (4) which calculates ~~the~~ sum (ΣPCR) of ~~the~~ nominal traffic parameters Peak Cell Rate (PCR_i) of each of the ATM connections of the DBR type at ~~the a~~ related output port, including ~~the a~~ newly requested connection;
- a second arithmetic unit (6) which compares the calculated sum (ΣPCR) with the value of $\rho \times C$, the result of the first sub-device being negative if ΣPCR is greater than $\rho \times C$, and the result of the first sub-device being positive if ΣPCR is less than or equal to $\rho \times C$;

and **said a** second sub-device comprising:

- for each of the ATM connections of the DBR type at the related output port, including the newly requested connection, a third arithmetic unit (7), which calculates a buffer capacity $b_{s,i}$, the value of $b_{s,i}$ being equal to zero if the product of the nominal Peak Cell Rate (PCR_i) and Cell Delay Variation

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Tolerance($CDVT_i$) of the related connection is less than or equal to ~~the~~ a constant K , and the value of $b_{s,i}$ being equal to said product minus the value of K if said product is greater than K ;

- a fourth arithmetic unit (8) which calculates the sum (B_s) of the calculated values $b_{s,i}$ for all ATM connections at the related output port;
- a fifth arithmetic unit (9) which calculates a buffer capacity B_N , such that upon multiplexing of N independent, identical and ideal ($CDVT = 0$) traffic streams, using a single buffer with a buffer capacity of B_N , and assuming a maximum link load having a value of ρ , the average probability of cell loss as a result of buffer overflow will not exceed ~~the~~ a given value of ϵ ;
- a sixth arithmetic unit (10) which calculates ~~the~~ product (B_{NK}) of the value of B_N and the constant value K ;
- a seventh arithmetic unit (11) which determines the sum (B_R) of the calculated values for B_s and B_{NK} ;
- a comparison device (12) which compares the calculated sum B_R with the given capacity B of the output buffer, a positive admission signal being emitted if the value of B_R is less than or equal to B , and a negative admission signal being emitted if the value of B_R is greater than B .

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

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- a. Nattkemper, Dieter H. et al. (US 6754206 B1) entitled: *Distributed telecommunications switching system and method*
- b. Horlin, Dan et al. (US 20040042400 A1) entitled: *Connection admission control based on bandwidth and buffer usage*
- c. Davison, Robert G et al. (US 6665264 B1) entitled: *Connection admission control for connection orientated networks*
- d. Oliva, Stephen Arthur (US 6459681 B1) entitled: *Method and system for connection admission control*
- e. Smith, Avril J et al. (US 6452905 B1) entitled: *Broadband switching system*
- f. Chow, Henry et al. (US 6438134 B1) entitled: *Two-component bandwidth scheduler having application in multi-class digital communications systems*
- g. Fan, Ruixue et al. (US 6324165 B1) entitled: *Large capacity, multiclass core ATM switch architecture*
- h. Aida, Masaki (US 6212163 B1) entitled: *Method and device for multi-class ATM connection admission control*
- i. Clark, Timothy Ian James et al. (US 5970064 A) entitled: *Real time control architecture for admission control in communications network*
- j. Hatono, Atsuo et al. (US 5959991 A) entitled: *Cell loss priority control method for ATM switch and ATM switch controlled by the method*
- k. Huang, Chun-Chong (WO 9701895 A2) entitled: *Connection Admission Control System (CAC) for ATM Networks*

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NON PATENT DOCUMENTS

l. Zukerman et al., "A measurement based connection admission control for ATM networks," Proc. ICATM '98, Jun. 1998.

m. Tham et al., "Multi-service connection admission control using modular neural networks", In Proceedings of the Conference on Computer Communications, IEEE Infocom, San Francisco, California 1998

5. This application is in condition for allowance except for the formal matters and objections made above.


Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Yemane Gerezgiher whose telephone number is 703-305-4874. The examiner can normally be reached on Monday- Friday from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful. The examiner's supervisor, William Cuchlinski, can be reached at (703) 308-3873.

Yemane M. Gerezgiher
Group Art Unit 2144


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